REMARKS-General

By above amendment, the applicant has rewritten all claims to define the invention distinctly so as to overcome the technical rejections and define the invention patentably over the prior art.

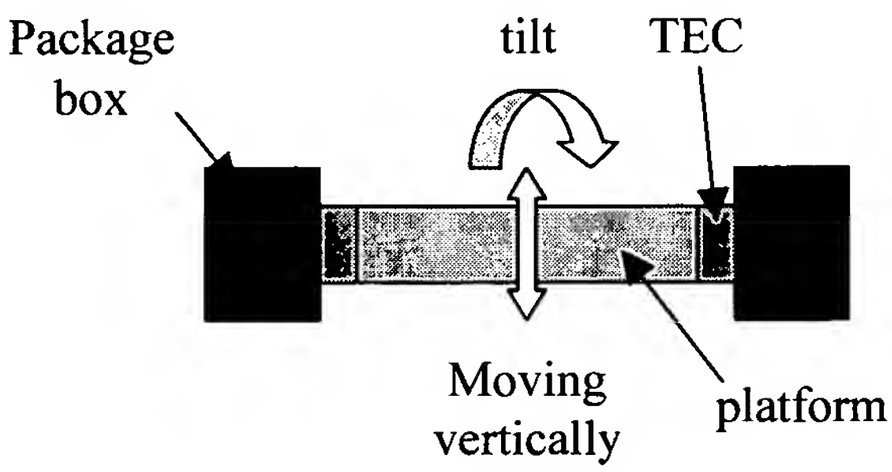
I read the patents US 5,195,155, US 5,065,226, US 2003/0174976, and US 4,615,031 carefully a few times. I do believe what are disclosed in my invention cannot be taught in the cited patents.

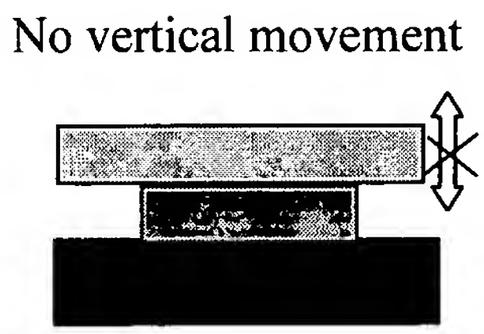
The essence of opto-electronic packaging is to optically align opto-electronic devices to an optical connector (including an optical fiber with/without a lens), which is attached on the package box. There are different ways to align the opto-electronic devices to the optical connector optically, as disclosed in the prior patents. The opto-electronic device sits on a thermally conductive platform and a lens extracts the light emission from the opto-electronic device. The extracted light emission is collimated or converged on the optical connector.

In the previous art, as disclosed in the Fig. 1 of my patent application, the opto-electronic devices and multi-optical components sit on a platform and the platform sits on the base or TEC then on the base of the package box. The height of every device is precisely calculated and machined to allow the height of the opto-electronic device to match the height of the optical connector to achieve a good optical coupling. It is very expensive and difficult to machine every part to such high precision (better than sub micron). As disclosed in Shimaoka's patent, the opto-electronic device also sits on the platform, said platform sits on a TEC, said TEC sits on the base (or a sidewall) of the package and the optical coupling was achieved by adjusting a lens holder (a pipe in the patent) or deforming plastically an optical element holder. If the TEC mounted on the base or a sidewall, the opto-electronic device, the platform, and TEC are vertically integrated. The height of the opto-electronic device (from the opto-electronic device to the base or sidewall) only can be changed by changing the thickness of platform or TEC or both. The platform cannot move vertically against the TEC (it can only move in parallel to the TEC). In Figure 20 and Figure 21 of Shimaoka's patent, the top and the bottom of the TEC look like thermally shorted (the top and the bottom of the TEC are thermally connected by the sidewall). It may be a drawing mistake. However, Figure 20 and Figure 21 teach a package in which an opto-electronic device, platform (carrier), TEC and the base are vertically integrated.

In Kluitmans's patent, the opto-electronic device sits on a platform (BC), said platform (BC) sits on a cooling block (CB), and said cooling block sits on a L-shape cooling plate (CP) to conduct thermal energy from said opto-electronic device to the package. Said L-shape cooling plate is attached to the bottom and the one side of the package. However, the height of said opto-electronic device can not be adjusted by moving said platform vertically, since the CP is fixed to the base. As in the Shimaoka's invention, the opto-electronic device, platform and the base are vertically integrated, too, as shown in the following graph.

In my patent application, a new package is disclosed. The opto-electronic device, platform, or TEC, and the sidewalls of the package are not vertically integrated. The opto-electronic device with other optical components sits on the platform and can be laterally moved on the platform. The platform does not vertically sit on the TEC. The platform is laterally attached to the tops of the TECs; the TECs are fixed to the sidewalls of the package. **The platform is perpendicular to the TECs**. The platform can be vertically adjusted before its fixture to the sidewalls, as shown in the following graph. The lateral movement of the opto-electronic device and optical components on the platform and the vertical movement of the platform against the sidewalls or TECs render a full spatial adjustment of the opto-electronic device against an optical connector attached on one sidewall of the package to achieve a good optical coupling between the opto-electronic device and the optical connector. If without TEC, the platform can be directly attached to the sidewalls. Obviously, the package is not taught in previous arts. The benefits of the package are 1) the reduction of the package height; 2) the usage of less precisely machined components (e.g., the height of the platform is not critical to the optical coupling in the disclosed package); and 3) the simplification of packaging process.





Conclusion

The new configuration (the platform is laterally attached to the sidewalls/or to the tops of TECs, whose bottoms are fixed on the sidewalls of a package) of opto-electronic package taught in this disclosure renders a new way to align the opto-electronic device inside the package and the optical connector outside the package. It is obviously not taught and can not be derived in prior art. For all of the above reasons, applicants submit that claims are in proper form, and that the claims all define patentably over the prior art. Therefore I submit that this application is now in condition for allowance, which action I respectfully solicit.

Conditional Request For Constructive Assistance

I have amended the claims of this application so that they are proper, definite, and define novel structure that is also unobvious. If, for any reason this application is not believed to

be in full condition for allowance, I respectfully request the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. § 2173.02 and §707.07(j) in order that I can place this application in allowable condition as soon as possible and without the need for further proceedings.

Very respectfully,

Rong Huang

8601 Middleton Circle
Harrisburg, NC 28075
(508)366 7356
r.huang@yahoo.com